

B

a source of hydrogen atom associated with said first compartment;  
a catalyst having a net enthalpy of reaction of at least  $m27$  eV, where  $m$  is  
an integer, for catalyzing the formation of hydrino atoms from said hydrogen atoms;  
[and a cathode]  
a second compartment containing an anode; and  
a salt bridge between said anode and said cathode.

---

11 15. (Amended) A fuel cell comprising:  
a vessel having first and second compartments;  
a source of hydrino atoms associated with said first compartment [vessel];  
[and]  
a cathode in said [vessel] first compartment;  
an anode in said second compartment; and  
a salt bridge connecting said anode and said cathode.

---

B

14  
16. (Amended) A fuel cell comprising:  
a vessel;  
a source of hydrogen atoms associated with said [vessel] first compartment;  
a cathode in said first compartment [vessel]; [and]  
a source of catalyst for forming hydrino atoms from said hydrogen atoms,  
said source of catalyst comprising a salt of rubidium;  
an anode in said second compartment; and  
a salt bridge connecting said anode and said cathode.

---

B

16 18. (Amended) A fuel cell comprising:  
a vessel having first and second compartments;  
a source of hydrogen atoms associated with said [vessel] first compartment;  
a cathode in said [vessel] first compartment; [and]  
a source of catalyst for forming hydrino atoms from said hydrogen atoms,

137

BB  
said source of catalyst comprising a salt of potassium;  
an anode in said second compartment; and  
a salt bridge connecting said anode and said cathode.

---

BB  
1820. (Amended) A fuel cell comprising:  
a vessel having first and second compartments;  
a source of hydrogen atoms associated with said [vessel] first compartment;  
a cathode in said [vessel] first compartment; [and]  
a source of catalyst for forming hydrino atoms from said hydrogen atoms,  
said source of catalyst comprising a salt of titanium  
an anode in said second compartment; and  
a salt bridge connecting said anode and said cathode.

---

BB  
2022. (Amended) A fuel cell comprising:  
a vessel having first and second compartments;  
a source of hydrogen atoms associated with said [vessel] first compartment;  
a cathode in said [vessel] first compartment; [and]  
an anode in said second compartment;  
a salt bridge connecting said anode and said cathode; and  
a source of catalyst for forming hydrino atoms from said hydrogen atoms,  
said source of catalyst comprising at least one selected from the group consisting  
of  $(Al^{2+})$ ,  $(Ar^+)$ ,  $(Ti^{2+})$ ,  $(As^{2+})$ ,  $(Rb^+)$ ,  $(Mo^{2+})$ ,  $(Ru^{2+})$ ,  $(In^{2+})$ , and  $(Te^{2+})$ .

BB  
2123. (Amended) A fuel cell comprising:  
a vessel having first and second compartments;  
a source of hydrogen atoms associated with said [vessel] first compartment;  
a cathode in said [vessel] first compartment; [and]  
an anode in said second compartment;  
a salt bridge connecting said anode and said cathode; and

a source of catalyst for forming hydrino atoms from said hydrogen atoms, said catalyst being capable of providing a net enthalpy of reaction in the range of 26.8 to 28.5 eV.

22/24

(Amended) A fuel cell comprising:

a vessel having first and second compartments;

a source of hydrogen atoms associated with said [vessel] first compartment;

a cathode in said [vessel] first compartment; [and]

an anode in said second compartment;

a salt bridge connecting said anode and said cathode; and

a source of catalyst for forming hydrino atoms from said hydrogen atoms, said catalyst comprising at least one pair of ions selected from the group consisting of: (Sn<sup>4+</sup>, Si<sup>4+</sup>), (Pr<sup>3+</sup>, Ca<sup>2+</sup>), (Sr<sup>2+</sup>, Cr<sup>2+</sup>), (Cr<sup>3+</sup>, Tb<sup>3+</sup>), (Sb<sup>3+</sup>, Co<sup>2+</sup>), (Bi<sup>3+</sup>, Ni<sup>2+</sup>), (Pd<sup>2+</sup>, In<sup>+</sup>), (La<sup>3+</sup>, Dy<sup>3+</sup>), (La<sup>3+</sup>, Ho<sup>3+</sup>), (K<sup>+</sup>, K<sup>+</sup>), (V<sup>3+</sup>, Pd<sup>2+</sup>), (Lu<sup>3+</sup>, Zn<sup>2+</sup>), (As<sup>3+</sup>, Ho<sup>3+</sup>), (Mo<sup>5+</sup>, Sn<sup>4+</sup>), (Sb<sup>3+</sup>, Cd<sup>2+</sup>), (Ag<sup>2+</sup>, Ag<sup>+</sup>), (La<sup>3+</sup>, Er<sup>3+</sup>), (V<sup>4+</sup>, B<sup>3+</sup>), (Fe<sup>3+</sup>, Ti<sup>3+</sup>), (Co<sup>2+</sup>, Ti<sup>+</sup>), (Bi<sup>3+</sup>, Zn<sup>2+</sup>), (As<sup>3+</sup>, Dy<sup>3+</sup>), (Ho<sup>3+</sup>, Mg<sup>2+</sup>), (K<sup>+</sup>, Rb<sup>+</sup>), (Cr<sup>3+</sup>, Pr<sup>3+</sup>), (Sr<sup>2+</sup>, Fe<sup>2+</sup>), (Ni<sup>2+</sup>, Cu<sup>+</sup>), (Li<sup>+</sup>, Pb<sup>2+</sup>), (Sr<sup>2+</sup>, Mo<sup>2+</sup>), (Y<sup>3+</sup>, Zr<sup>4+</sup>), (Cd<sup>2+</sup>, Ba<sup>2+</sup>), (Ho<sup>3+</sup>, Pb<sup>2+</sup>), (Eu<sup>3+</sup>, Mg<sup>2+</sup>), (Er<sup>3+</sup>, Mg<sup>2+</sup>), (Bi<sup>4+</sup>, Al<sup>3+</sup>), (Ca<sup>2+</sup>, Sm<sup>3+</sup>), (V<sup>3+</sup>, La<sup>3+</sup>), (Gd<sup>3+</sup>, Cr<sup>2+</sup>), (Mn<sup>2+</sup>, Ti<sup>+</sup>), (Yb<sup>3+</sup>, Fe<sup>2+</sup>), (Ni<sup>2+</sup>, Ag<sup>+</sup>), (Zn<sup>2+</sup>, Yb<sup>2+</sup>), (Se<sup>4+</sup>, Sn<sup>4+</sup>), (Sb<sup>3+</sup>, Bi<sup>2+</sup>), and (Eu<sup>3+</sup>, Pb<sup>2+</sup>).

23/25

(Amended) A fuel cell comprising:

a vessel having first and second compartments;

a source of hydrogen atoms associated with said [vessel] first compartment;

a cathode in said [vessel] first compartment; [and]

an anode in said second compartment;

a salt bridge connecting said anode and said cathode; and

a source of catalyst for forming hydrino atoms from said hydrogen atoms, said catalyst comprising oxygen in combination with at least one atom selected from the group consisting of Cu, As, Pd, Te, Cs and Pt.

139

24  
26.

(Amended) A fuel cell comprising:

a vessel having first and second compartments;

a source of hydrogen atoms associated with said [vessel] first compartment;

a cathode in said [vessel] first compartment; [and]

an anode in said second compartment;

a salt bridge connecting said anode and said cathode; and

a source of catalyst for forming hydrino atoms from said hydrogen atoms, said catalyst comprising at least one pair selected from the group consisting of: (B, Li<sup>+</sup>), (S, Li<sup>+</sup>), (Br, Li<sup>+</sup>), (Pm<sup>+</sup>, Li<sup>+</sup>), (Sm<sup>+</sup>, Li<sup>+</sup>), (Tb<sup>+</sup>, Li<sup>+</sup>), (Dy<sup>+</sup>, Li<sup>+</sup>), (Sb<sup>+</sup>, H<sup>+</sup>) and (Bi<sup>+</sup>, H<sup>+</sup>).

25  
27.

(Amended) A fuel cell comprising:

a vessel having first and second compartments;

a source of hydrogen atoms associated with said [vessel] first compartment;

a cathode in said [vessel] first compartment; [and]

an anode in said second compartment;

a salt bridge connecting said anode and said cathode; and

a source of catalyst for forming hydrino atoms from said hydrogen atoms, said catalyst comprising at least one pair selected from the group consisting of:

( He 0+ , Co 3+ );	( O 1+ , Nd 4+ );	( Al 2+ , Cl 5+ );
( He 0+ , Ga 3+ );	( O 1+ , Tb 4+ );	( Al 4+ , Mn 8+ );
( Li 0+ , Ni 3+ );	( O 2+ , Ne 3+ );	( Si 1+ , Mg 2+ );
( Li 0+ , Xe 3+ );	( O 3+ , Sb 6+ );	( Si 1+ , V 2+ );
( Li 0+ , Hg 3+ );	( O 4+ , Fe 7+ );	( Si 1+ , Tc 2+ );
( Li 1+ , Na 4+ );	( F 0+ , Al 2+ );	( Si 1+ , Sn 2+ );
( Li 1+ , Y 6+ );	( F 0+ , Si 2+ );	( Si 1+ , Hf 2+ );
( Be 1+ , Bi 6+ );	( F 0+ , Fe 2+ );	( Si 1+ , Pb 2+ );
( Be 2+ , Al 6+ );	( F 0+ , Co 2+ );	( Si 2+ , Co 3+ );
( B 1+ , C 2+ );	( F 0+ , Ru 2+ );	( Si 2+ , Ga 3+ );
( B 1+ , K 2+ );	( F 0+ , In 2+ );	( Si 2+ , Ge 3+ );
( B 1+ , Ho 3+ );	( F 0+ , Sb 2+ );	( Si 2+ , Tl 3+ );
( B 1+ , Er 3+ );	( F 0+ , Bi 2+ );	( Si 3+ , Ni 6+ );
( B 1+ , Tm 3+ );	( F 1+ , Sb 4+ );	( Si 3+ , Rb 7+ );
( B 1+ , Lu 3+ );	( F 3+ , Fe 6+ );	( Si 4+ , Al 6+ );
( C 1+ , N 2+ );	( Ne 0+ , Sm 3+ );	( P 1+ , Mg 2+ );
( C 1+ , V 3+ );	( Ne 0+ , Dy 3+ );	( P 1+ , Tc 2+ );

T1400X

140

( C 1+ , Tc 3+ );	(Ne 0+ , Ho 3+ );	(P 1+ , Sn 2+ );
( C 1+ , Ru 3+ );	(Ne 0+ , Er 3+ );	(P 1+ , Hf 2+ );
( C 1+ , Sn 3+ );	(Ne 0+ , Lu 3+ );	(P 1+ , Pb 2+ );
( C 2+ , Mn 4+ );	(Ne 1+ , N 3+ );	(P 2+ , Ni 3+ );
( C 2+ , Co 4+ );	(Ne 1+ , K 3+ );	(P 2+ , Cd 3+ );
( N 0+ , Sr 2+ );	(Ne 1+ , V 4+ );	(P 2+ , Xe 3+ );
( N 0+ , La 2+ );	(Ne 2+ , O 4+ );	(P 3+ , Nb 5+ );
( N 0+ , Ce 2+ );	(Na 0+ , Al 2+ );	(P 5+ , C 5+ );
( N 0+ , Pr 2+ );	(Na 0+ , Si 2+ );	(S 1+ , P 2+ );
( N 0+ , Nd 2+ );	(Na 0+ , Fe 2+ );	(S 1+ , Se 2+ );
( N 0+ , Pm 2+ );	(Na 0+ , Co 2+ );	(S 1+ , La 3+ );
( N 0+ , Sm 2+ );	(Na 0+ , Ru 2+ );	(S 1+ , Ce 3+ );
( N 0+ , Eu 2+ );	(Na 0+ , In 2+ );	(S 1+ , Au 2+ );
( N 1+ , O 2+ );	(Na 0+ , Sb 2+ );	(S 2+ , Sr 3+ );
( N 1+ , Si 3+ );	(Na 0+ , Bi 2+ );	(S 2+ , Cd 3+ );
( N 1+ , P 3+ );	(Na 2+ , Ti 5+ );	(S 3+ , Cu 4+ );
( N 1+ , Mn 3+ );	(Na 2+ , Kr 6+ );	(S 3+ , Rb 4+ );
( N 1+ , Rh 3+ );	(Na 3+ , Y 7+ );	(S 4+ , O 4+ );
( N 2+ , F 3+ );	(Mg 1+ , Rb 3+ );	(Cl 1+ , C 2+ );
( N 3+ , Br 6+ );	(Mg 1+ , Eu 4+ );	(Cl 1+ , K 2+ );
( O 0+ , Ti 2+ );	(Mg 3+ , Ne 5+ );	(Cl 1+ , Zr 3+ );
( O 0+ , V 2+ );	(Mg 6+ , Cl 8+ );	(Cl 1+ , Eu 3+ );
( O 0+ , Nb 2+ );	(Al 1+ , Sc 2+ );	(Cl 1+ , Tm 3+ );
( O 0+ , Hf 2+ );	(Al 1+ , Zr 2+ );	(Cl 2+ , Te 4+ );
( O 1+ , Ne 2+ );	(Al 1+ , Lu 2+ );	(Cl 2+ , Sm 4+ );
( O 1+ , Ca 3+ );	(Al 2+ , S 5+ );	(Cl 2+ , Gd 4+ );
( Cl 2+ , Ho 4+ );	(Sc 4+ , N 5+ );	(Mn 4+ , Ge 5+ );
( Cl 2+ , Er 4+ );	(Ti 2+ , Ar 2+ );	(Fe 1+ , Sc 2+ );
( Cl 3+ , Cl 4+ );	(Ti 2+ , Mo 3+ );	(Fe 1+ , Y 2+ );
( Cl 5+ , Ni 6+ );	(Ti 4+ , O 5+ );	(Fe 1+ , Yb 2+ );
( Cl 5+ , Cu 6+ );	(Ti 4+ , Zn 6+ );	(Fe 1+ , Lu 2+ );
( Cl 5+ , Rb 7+ );	(Ti 4+ , As 6+ );	(Fe 2+ , S 3+ );
( Ar 0+ , Ba 2+ );	(V 1+ , Sr 2+ );	(Fe 2+ , Cu 3+ );
( Ar 0+ , Ce 2+ );	(V 1+ , La 2+ );	(Fe 2+ , Zn 3+ );
( Ar 0+ , Pr 2+ );	(V 1+ , Ce 2+ );	(Fe 2+ , Br 3+ );
( Ar 0+ , Nd 2+ );	(V 1+ , Pr 2+ );	(Fe 2+ , Zr 4+ );
( Ar 0+ , Ra 2+ );	(V 1+ , Nd 2+ );	(Fe 2+ , Ce 4+ );
( Ar 1+ , Ti 3+ );	(V 1+ , Pm 2+ );	(Fe 5+ , Sr 7+ );
( Ar 2+ , C 3+ );	(V 1+ , Sm 2+ );	(Co 1+ , Mg 2+ );
( Ar 3+ , K 4+ );	(V 1+ , Eu 2+ );	(Co 1+ , Cr 2+ );
( Ar 3+ , Br 5+ );	(V 2+ , O 2+ );	(Co 1+ , Mn 2+ );
( Ar 3+ , Mo 5+ );	(V 3+ , Mn 4+ );	(Co 1+ , Mo 2+ );
( Ar 4+ , Y 5+ );	(V 3+ , Co 4+ );	(Co 1+ , Tc 2+ );
( K 1+ , Si 3+ );	(V 4+ , Ar 6+ );	(Co 1+ , Pb 2+ );
( K 1+ , P 3+ );	(V 4+ , Sc 5+ );	(Co 2+ , Cu 3+ );
( K 1+ , Mn 3+ );	(V 5+ , Mg 5+ );	(Co 2+ , Zn 3+ );
( K 1+ , Ge 3+ );	(V 6+ , Sc 8+ );	(Co 2+ , Br 3+ );
( K 1+ , Rh 3+ );	(V 6+ , Br 8+ );	(Co 2+ , Zr 4+ );
( K 1+ , Tl 3+ );	(Cr 1+ , Sc 2+ );	(Co 2+ , Ag 3+ );
( K 2+ , He 2+ );	(Cr 1+ , Ti 2+ );	(Co 2+ , Ce 4+ );

5

141

( K 2+ , Si 4+ );	(Cr 1+ , Zr 2+ );	(Co 2+ , Hf 4+ );
( K 2+ , As 4+ );	(Cr 1+ , Lu 2+ );	(Co 4+ , Nb 6+ );
( K 3+ , P 5+ );	(Cr 2+ , F 2+ );	(Co 5+ , Sc 6+ );
( K 3+ , Zr 5+ );	(Cr 2+ , Na 2+ );	(Ni 1+ , Co 2+ );
( K 4+ , Rb 6+ );	(Cr 2+ , Se 3+ );	(Ni 1+ , Ni 2+ );
( K 5+ , Mg 4+ );	(Cr 2+ , Pd 3+ );	(Ni 1+ , Rh 2+ );
( K 5+ , Kr 7+ );	(Cr 2+ , I 3+ );	(Ni 1+ , Cd 2+ );
( K 6+ , Y 8+ );	(Cr 2+ , Hg 3+ );	(Ni 1+ , Sb 2+ );
( Ca 1+ , C 2+ );	(Cr 3+ , O 3+ );	(Ni 2+ , Ne 2+ );
( Ca 1+ , Sm 3+ );	(Cr 3+ , Ni 4+ );	(Ni 2+ , Ca 3+ );
( Ca 1+ , Dy 3+ );	(Cr 4+ , O 4+ );	(Ni 2+ , Nd 4+ );
( Ca 1+ , Ho 3+ );	(Cr 5+ , Ne 5+ );	(Ni 2+ , Tb 4+ );
( Ca 1+ , Er 3+ );	(Cr 5+ , Fe 7+ );	(Ni 4+ , Rb 6+ );
( Ca 1+ , Tm 3+ );	(Mn 1+ , V 2+ );	(Ni 6+ , Ar 8+ );
( Ca 1+ , Lu 3+ );	(Mn 1+ , Nb 2+ );	(Cu 1+ , Ag 2+ );
( Ca 2+ , O 3+ );	(Mn 1+ , Sn 2+ );	(Cu 1+ , I 2+ );
( Ca 2+ , Ni 4+ );	(Mn 1+ , Hf 2+ );	(Cu 1+ , Cs 2+ );
( Ca 3+ , Mn 5+ );	(Mn 2+ , Cu 3+ );	(Cu 1+ , Au 2+ );
( Ca 3+ , Rb 5+ );	(Mn 2+ , Zn 3+ );	(Cu 1+ , Hg 2+ );
( Ca 4+ , Cl 6+ );	(Mn 2+ , Br 3+ );	(Cu 2+ , Sm 4+ );
( Ca 4+ , Ar 6+ );	(Mn 2+ , Zr 4+ );	(Cu 2+ , Gd 4+ );
( Ca 4+ , Sc 5+ );	(Mn 2+ , Ce 4+ );	(Cu 2+ , Dy 4+ );
( Ca 5+ , Y 7+ );	(Mn 2+ , Hf 4+ );	(Cu 3+ , K 4+ );
( Sc 2+ , Ti 4+ );	(Mn 3+ , Mg 3+ );	(Cu 3+ , Br 5+ );
( Sc 2+ , Bi 4+ );	(Mn 3+ , Te 5+ );	(Cu 3+ , Mo 5+ );
( Cu 4+ , Rb 6+ );	(Se 1+ , Fe 2+ );	(Sr 1+ , Ga 2+ );
( Cu 5+ , Mn 7+ );	(Se 1+ , Co 2+ );	(Sr 1+ , Te 2+ );
( Zn 1+ , P 2+ );	(Se 1+ , Ge 2+ );	(Sr 1+ , Pt 2+ );
( Zn 1+ , I 2+ );	(Se 1+ , Ru 2+ );	(Sr 1+ , Tl 2+ );
( Zn 1+ , La 3+ );	(Se 1+ , In 2+ );	(Sr 2+ , C 3+ );
( Zn 1+ , Au 2+ );	(Se 1+ , Bi 2+ );	(Sr 2+ , Mo 4+ );
( Zn 1+ , Hg 2+ );	(Se 2+ , Te 3+ );	(Sr 3+ , Ar 4+ );
( Zn 2+ , Ti 4+ );	(Se 3+ , Br 4+ );	(Sr 3+ , Sr 4+ );
( Zn 2+ , Sn 4+ );	(Se 5+ , Y 7+ );	(Sr 3+ , Sb 5+ );
( Zn 2+ , Bi 4+ );	(Br 1+ , P 2+ );	(Sr 3+ , Bi 5+ );
( Zn 3+ , As 5+ );	(Br 1+ , I 2+ );	(Sr 4+ , Ar 5+ );
( Zn 4+ , Sr 6+ );	(Br 1+ , La 3+ );	(Sr 4+ , Cu 5+ );
( Zn 5+ , Mn 7+ );	(Br 1+ , Au 2+ );	(Y 2+ , Sr 3+ );
( Zn 6+ , Mo 8+ );	(Br 3+ , He 2+ );	(Y 2+ , Cd 3+ );
( Ga 1+ , Cr 2+ );	(Br 3+ , Si 4+ );	(Y 3+ , Se 5+ );
( Ga 1+ , Mn 2+ );	(Br 3+ , Ge 4+ );	(Y 3+ , Pb 5+ );
( Ga 1+ , Fe 2+ );	(Br 4+ , S 5+ );	(Y 4+ , Ti 5+ );
( Ga 1+ , Ge 2+ );	(Br 4+ , Cl 5+ );	(Y 4+ , Zn 5+ );
( Ga 1+ , Mo 2+ );	(Br 5+ , Sb 6+ );	(Y 5+ , Co 6+ );
( Ga 1+ , Ru 2+ );	(Br 6+ , Ar 8+ );	(Y 6+ , K 7+ );
( Ga 1+ , Bi 2+ );	(Kr 1+ , B 2+ );	(Zr 2+ , P 2+ );
( Ga 2+ , Rb 3+ );	(Kr 1+ , S 2+ );	(Zr 2+ , Ag 2+ );
( Ga 2+ , Eu 4+ );	(Kr 1+ , Br 2+ );	(Zr 2+ , I 2+ );
( Ga 2+ , Tm 4+ );	(Kr 1+ , Xe 2+ );	(Zr 2+ , Cs 2+ );
( Ge 1+ , Mg 2+ );	(Kr 1+ , Nd 3+ );	(Zr 2+ , La 3+ );

*BB*

( Ge 1+ , Mn 2+ );	(Kr 1+ , Pm 3+ );	(Zr 2+ , Au 2+ );
( Ge 1+ , Tc 2+ );	(Kr 1+ , Tb 3+ );	(Zr 2+ , Hg 2+ );
( Ge 1+ , Sn 2+ );	(Kr 2+ , Kr 3+ );	(Nb 2+ , C 2+ );
( Ge 1+ , Pb 2+ );	(Kr 2+ , Tb 4+ );	(Nb 2+ , K 2+ );
( Ge 2+ , F 2+ );	(Kr 3+ , O 3+ );	(Nb 2+ , Zr 3+ );
( Ge 2+ , Na 2+ );	(Kr 3+ , Ni 4+ );	(Nb 2+ , Eu 3+ );
( Ge 2+ , Se 3+ );	(Kr 3+ , Kr 4+ );	(Nb 2+ , Tm 3+ );
( Ge 2+ , Pd 3+ );	(Kr 3+ , Nb 5+ );	(Nb 2+ , Lu 3+ );
( Ge 2+ , I 3+ );	(Kr 4+ , Zr 5+ );	(Nb 3+ , Kr 3+ );
( Ge 3+ , V 5+ );	(Kr 5+ , Sr 6+ );	(Nb 3+ , Pr 4+ );
( Ge 3+ , Se 5+ );	(Kr 6+ , Y 7+ );	(Nb 3+ , Tb 4+ );
( Ge 3+ , Pb 5+ );	(Rb 1+ , Nb 3+ );	(Nb 4+ , N 4+ );
( As 1+ , Sc 2+ );	(Rb 2+ , Te 4+ );	(Mo 1+ , Ba 2+ );
( As 1+ , Y 2+ );	(Rb 2+ , Sm 4+ );	(Mo 1+ , Pr 2+ );
( As 1+ , Zr 2+ );	(Rb 2+ , Gd 4+ );	(Mo 1+ , Nd 2+ );
( As 1+ , Lu 2+ );	(Rb 2+ , Dy 4+ );	(Mo 1+ , Ra 2+ );
( As 2+ , Co 3+ );	(Rb 2+ , Ho 4+ );	(Mo 2+ , Ru 3+ );
( As 2+ , Ga 3+ );	(Rb 2+ , Er 4+ );	(Mo 2+ , Sn 3+ );
( As 2+ , Ge 3+ );	(Rb 3+ , Mg 3+ );	(Mo 3+ , Cr 4+ );
( As 2+ , Tl 3+ );	(Rb 3+ , Te 5+ );	(Mo 3+ , Ge 4+ );
( As 3+ , Fe 4+ );	(Rb 5+ , Rb 6+ );	(Mo 4+ , Bi 5+ );
( As 4+ , Sb 6+ );	(Rb 6+ , Te 7+ );	(Mo 5+ , Mn 6+ );
( Se 1+ , Al 2+ );	(Sr 1+ , Be 2+ );	(Mo 6+ , O 6+ );
( Se 1+ , Si 2+ );	(Sr 1+ , Zn 2+ );	(Mo 6+ , Cr 7+ );
( Tc 1+ , Sr 2+ );	(Sn 1+ , Er 2+ );	(Pr 2+ , Xe 2+ );
( Tc 1+ , La 2+ );	(Sn 2+ , N 2+ );	(Pr 2+ , Pr 3+ );
( Tc 1+ , Ce 2+ );	(Sn 2+ , Ar 2+ );	(Pr 2+ , Nd 3+ );
( Tc 1+ , Pm 2+ );	(Sn 2+ , V 3+ );	(Pr 2+ , Pm 3+ );
( Tc 1+ , Sm 2+ );	(Sn 2+ , Mo 3+ );	(Pr 2+ , Gd 3+ );
( Tc 1+ , Eu 2+ );	(Sn 3+ , Mn 4+ );	(Pr 2+ , Tb 3+ );
( Tc 1+ , Tb 2+ );	(Sn 3+ , Fe 4+ );	(Nd 2+ , Sm 3+ );
( Tc 1+ , Dy 2+ );	(Sn 3+ , Co 4+ );	(Nd 2+ , Dy 3+ );
( Ru 1+ , Ca 2+ );	(Sb 2+ , Ti 3+ );	(Nd 2+ , Ho 3+ );
( Ru 1+ , Eu 2+ );	(Sb 2+ , Sb 3+ );	(Nd 2+ , Er 3+ );
( Ru 1+ , Tb 2+ );	(Sb 2+ , Bi 3+ );	(Nd 2+ , Lu 3+ );
( Ru 1+ , Dy 2+ );	(Sb 3+ , C 3+ );	(Pm 2+ , C 2+ );
( Ru 1+ , Ho 2+ );	(Te 1+ , Sc 2+ );	(Pm 2+ , K 2+ );
( Ru 1+ , Er 2+ );	(Te 1+ , Y 2+ );	(Pm 2+ , Zr 3+ );
( Rh 1+ , V 2+ );	(Te 1+ , Gd 2+ );	(Pm 2+ , Eu 3+ );
( Rh 1+ , Nb 2+ );	(Te 1+ , Tm 2+ );	(Pm 2+ , Tm 3+ );
( Rh 1+ , Sn 2+ );	(Te 1+ , Yb 2+ );	(Sm 2+ , Cl 2+ );
( Rh 1+ , Hf 2+ );	(Te 1+ , Lu 2+ );	(Sm 2+ , Sc 3+ );
( Pd 1+ , Al 2+ );	(Te 2+ , Sc 3+ );	(Sm 2+ , Yb 3+ );
( Pd 1+ , Si 2+ );	(Te 2+ , Kr 2+ );	(Eu 2+ , Nb 3+ );
( Pd 1+ , Fe 2+ );	(Te 2+ , Yb 3+ );	(Gd 2+ , Cl 2+ );
( Pd 1+ , Co 2+ );	(Te 2+ , Hf 3+ );	(Gd 2+ , Sc 3+ );
( Pd 1+ , Ru 2+ );	(Te 3+ , Ar 3+ );	(Gd 2+ , Eu 3+ );
( Pd 1+ , In 2+ );	(Te 3+ , La 4+ );	(Gd 2+ , Yb 3+ );
( Pd 1+ , Sb 2+ );	(Te 3+ , Yb 4+ );	(Tb 2+ , B 2+ );
( Pd 1+ , Bi 2+ );	(Te 4+ , Bi 5+ );	(Tb 2+ , S 2+ );

( Ag 1+ , Cu 2+ ); (I 1+ , Al 2+ ); (Tb 2+ , Br 2+ );  
 ( Ag 1+ , As 2+ ); (I 1+ , Si 2+ ); (Tb 2+ , Xe 2+ );  
 ( Ag 1+ , Ag 2+ ); (I 1+ , Fe 2+ ); (Tb 2+ , Sm 3+ );  
 ( Ag 1+ , Cs 2+ ); (I 1+ , Co 2+ ); (Tb 2+ , Tb 3+ );  
 ( Ag 1+ , Hg 2+ ); (I 1+ , Ge 2+ ); (Tb 2+ , Dy 3+ );  
 ( Cd 1+ , Zn 2+ ); (I 1+ , Ru 2+ ); (Tb 2+ , Ho 3+ );  
 ( Cd 1+ , Ga 2+ ); (I 1+ , In 2+ ); (Tb 2+ , Er 3+ );  
 ( Cd 1+ , Cd 2+ ); (I 1+ , Bi 2+ ); (Dy 2+ , Cl 2+ );  
 ( Cd 1+ , Tl 2+ ); (Xe 1+ , Al 2+ ); (Dy 2+ , K 2+ );  
 ( In 1+ , Sc 2+ ); (Xe 1+ , Co 2+ ); (Dy 2+ , Zr 3+ );  
 ( In 1+ , Y 2+ ); (Xe 1+ , Ni 2+ ); (Dy 2+ , Eu 3+ );  
 ( In 1+ , Yb 2+ ); (Xe 1+ , Rh 2+ ); (Dy 2+ , Yb 3+ );  
 ( In 1+ , Lu 2+ ); (Xe 1+ , Cd 2+ ); (Ho 2+ , Sc 3+ );  
 ( In 2+ , Sr 3+ ); (Xe 1+ , Sb 2+ ); (Ho 2+ , Yb 3+ );  
 ( In 2+ , Cd 3+ ); (La 2+ , Ti 3+ ); (Ho 2+ , Hf 3+ );  
 ( Sn 1+ , Ca 2+ ); (La 2+ , Sb 3+ ); (Er 2+ , Sc 3+ );  
 ( Sn 1+ , Sr 2+ ); (Ce 2+ , Ag 2+ ); (Er 2+ , Yb 3+ );  
 ( Sn 1+ , La 2+ ); (Ce 2+ , I 2+ ); (Er 2+ , Hf 3+ );  
 ( Sn 1+ , Sm 2+ ); (Ce 2+ , Cs 2+ ); (Tm 2+ , Kr 2+ );  
 ( Sn 1+ , Eu 2+ ); (Ce 2+ , Au 2+ ); (Tm 2+ , Nb 3+ );  
 ( Sn 1+ , Tb 2+ ); (Ce 2+ , Hg 2+ ); (Tm 2+ , Hf 3+ );  
 ( Sn 1+ , Dy 2+ ); (Pr 2+ , B 2+ ); (Yb 2+ , Ti 3+ );  
 ( Sn 1+ , Ho 2+ ); (Pr 2+ , Y 3+ ); (Lu 2+ , Kr 2+ );  
 ( Lu 2+ , Hf 3+ ); (Pb 2+ , As 3+ ); (Tl 1+ , Mg 2+ );  
 ( Hf 2+ , As 2+ ); (Pb 2+ , In 3+ ); (Tl 1+ , Mn 2+ );  
 ( Hf 2+ , Ag 2+ ); (Pb 2+ , Te 3+ ); (Tl 1+ , Mo 2+ );  
 ( Hf 2+ , I 2+ ); (Pb 2+ , Pb 3+ ); (Tl 1+ , Tc 2+ );  
 ( Hf 2+ , Cs 2+ ); (Pb 3+ , Br 4+ ); (Tl 1+ , Sn 2+ );  
 ( Hf 2+ , Hg 2+ ); (Bi 1+ , Ba 2+ ); (Tl 1+ , Pb 2+ );  
 ( Hg 1+ , Al 2+ ); (Bi 2+ , Ar 2+ ); (Pb 1+ , Sc 2+ );  
 ( Hg 1+ , Si 2+ ); (Bi 2+ , Mo 3+ ); (Pb 1+ , Y 2+ );  
 ( Hg 1+ , Co 2+ ); (Bi 3+ , Se 4+ ); (Pb 1+ , Lu 2+ ); and  
 ( Hg 1+ , Ni 2+ ); (Bi 3+ , Mo 4+ ); (Pb 2+ , Fe 3+ );  
 ( Hg 1+ , Rh 2+ ); (Bi 3+ , Pb 4+ );  
 ( Hg 1+ , Cd 2+ ); (Bi 4+ , P 5+ );  
 ( Hg 1+ , In 2+ ); (Bi 4+ , Kr 5+ );  
 ( Hg 1+ , Sb 2+ ); (Bi 4+ , Zr 5+ );

26/28

(Amended) A fuel cell comprising:

a vessel having first and second compartments;

a source of hydrogen atoms associated with said [vessel] first compartment;

a cathode in said [vessel] first compartment; [and]

an anode in said second compartment;

a salt bridge connecting said anode and said cathode; and

144



a source of catalyst for forming hydrino atoms from said hydrogen atoms,  
said catalyst comprising at least one free atom selected from the group consisting  
of Be, Cu, Zn, Pd, Te and Pt.

27  
29.

(Amended) A fuel cell comprising:

a vessel having first and second compartments;

a source of hydrogen atoms associated with said [vessel] first compartment;

a cathode in said [vessel] first compartment; [and]

an anode in said second compartment;

a salt bridge connecting said anode and said cathode; and

a source of catalyst for forming hydrino atoms from said hydrogen atoms,

said catalyst comprising at least two species selected from the group consisting of:

( Li 0+ , Ar 5+ ); ( P 1+ , Nd 4+ ); ( Ti 2+ , As 5+ );  
( Li 0+ , Mo 6+ ); ( P 1+ , Tb 4+ ); ( Ti 2+ , Se 5+ );  
( Be 0+ , Kr 5+ ); ( P 3+ , Na 5+ ); ( V 1+ , Cd 3+ );  
( B 0+ , Sc 3+ ); ( S 0+ , Sm 3+ ); ( V 1+ , I 3+ );  
( B 0+ , Zr 3+ ); ( S 0+ , Dy 3+ ); ( V 1+ , Hg 3+ );  
( B 0+ , Yb 3+ ); ( S 0+ , Ho 3+ ); ( V 2+ , Kr 4+ );  
( C 0+ , Te 3+ ); ( S 0+ , Er 3+ ); ( V 2+ , Nb 5+ );  
( C 0+ , Tl 3+ ); ( S 0+ , Lu 3+ ); ( V 4+ , Ni 7+ );  
( N 0+ , Ag 3+ ); ( S 1+ , Nb 4+ ); ( V 4+ , Kr 8+ );  
( N 0+ , Cd 3+ ); ( S 1+ , Ho 4+ ); ( Cr 1+ , S 3+ );  
( N 0+ , Hg 3+ ); ( S 1+ , Er 4+ ); ( Cr 1+ , Ca 3+ );  
( N 1+ , Bi 5+ ); ( S 1+ , Tm 4+ ); ( Cr 3+ , Be 3+ );  
( N 2+ , Br 6+ ); ( S 2+ , Bi 5+ ); ( Cr 3+ , Zn 5+ );  
( N 2+ , Kr 6+ ); ( Cl 0+ , Ti 3+ ); ( Cr 5+ , Cu 8+ );  
( O 0+ , Cl 3+ ); ( Cl 1+ , Mo 4+ ); ( Mn 1+ , Nd 4+ );  
( O 0+ , Kr 3+ ); ( Cl 1+ , Pb 4+ ); ( Mn 1+ , Tb 4+ );  
( O 0+ , Sm 4+ ); ( Cl 3+ , Sc 5+ ); ( Mn 2+ , Ca 4+ );  
( O 0+ , Dy 4+ ); ( Cl 4+ , Br 7+ ); ( Mn 3+ , Nb 6+ );  
( O 2+ , Na 4+ ); ( Ar 0+ , Mn 3+ ); ( Mn 5+ , Ca 8+ );  
( O 2+ , Cl 6+ ); ( Ar 0+ , As 3+ ); ( Fe 1+ , Nd 4+ );  
( O 2+ , Mn 6+ ); ( Ar 0+ , Rh 3+ ); ( Fe 1+ , Pm 4+ );  
( O 3+ , Al 5+ ); ( Ar 0+ , Tl 3+ ); ( Fe 1+ , Tb 4+ );  
( F 0+ , Bi 4+ ); ( Ar 1+ , Mn 4+ ); ( Fe 3+ , Ne 4+ );  
( F 1+ , Mn 5+ ); ( Ar 1+ , In 4+ ); ( Fe 5+ , Mo 8+ );  
( F 3+ , Mg 5+ ); ( Ar 5+ , Mg 5+ ); ( Co 1+ , Pm 4+ );  
( F 4+ , Ti 8+ ); ( K 0+ , Al 3+ ); ( Co 2+ , C 4+ );  
( Ne 1+ , Ge 5+ ); ( K 0+ , Cr 3+ ); ( Co 3+ , Mg 4+ );  
( Ne 4+ , Al 6+ ); ( K 0+ , Pb 3+ ); ( Ni 1+ , La 4+ );

T  
b  
T1450X

145

( Na 0+ , Cr 4+ ); ( K 1+ , Sc 4+ ); ( Ni 1+ , Yb 4+ );  
 ( Na 0+ , Ge 4+ ); ( K 2+ , Cl 5+ ); ( Ni 1+ , Lu 4+ );  
 ( Na 1+ , Sc 5+ ); ( Ca 0+ , Eu 3+ ); ( Ni 2+ , K 4+ );  
 ( Na 1+ , Bi 6+ ); ( Ca 0+ , Dy 3+ ); ( Ni 5+ , Fe 8+ );  
 ( Na 3+ , Ne 6+ ); ( Ca 0+ , Ho 3+ ); ( Cu 0+ , Ce 3+ );  
 ( Na 4+ , Ne 7+ ); ( Ca 0+ , Er 3+ ); ( Cu 0+ , Pr 3+ );  
 ( Mg 0+ , Kr 3+ ); ( Ca 1+ , Mg 3+ ); ( Cu 1+ , Ar 3+ );  
 ( Mg 2+ , Al 5+ ); ( Ca 1+ , Fe 4+ ); ( Cu 1+ , Ti 4+ );  
 ( Mg 3+ , Na 6+ ); ( Ca 1+ , Co 4+ ); ( Cu 1+ , Te 4+ );  
 ( Al 1+ , Zr 5+ ); ( Ca 3+ , Co 6+ ); ( Cu 2+ , Sn 5+ );  
 ( Al 3+ , Mg 6+ ); ( Ca 3+ , Y 6+ ); ( Zn 0+ , Y 3+ );  
 ( Al 3+ , Cr 8+ ); ( Sc 1+ , C 3+ ); ( Zn 0+ , Pm 3+ );  
 ( Si 1+ , Zn 3+ ); ( Sc 1+ , Te 4+ ); ( Zn 0+ , Gd 3+ );  
 ( Si 1+ , Ce 4+ ); ( Ti 1+ , Mn 3+ ); ( Zn 0+ , Tb 3+ );  
 ( Si 2+ , Na 4+ ); ( Ti 1+ , Ga 3+ ); ( Zn 1+ , Mo 4+ );  
 ( Si 2+ , Cl 6+ ); ( Ti 1+ , As 3+ ); ( Zn 1+ , Pb 4+ );  
 ( Si 3+ , Be 4+ ); ( Ti 1+ , Rh 3+ ); ( Zn 2+ , N 4+ );  
 ( Si 5+ , N 6+ ); ( Ti 1+ , Tl 3+ ); ( Zn 2+ , Kr 5+ );  
 ( Zn 3+ , N 5+ ); ( Y 5+ , Co 7+ ); ( Ce 1+ , Ho 3+ );  
 ( Zn 5+ , Co 8+ ); ( Zr 1+ , Zr 3+ ); ( Ce 1+ , Er 3+ );  
 ( Ga 1+ , Bi 4+ ); ( Zr 2+ , Sc 4+ ); ( Ce 1+ , Lu 3+ );  
 ( Ge 1+ , S 3+ ); ( Zr 2+ , Sr 4+ ); ( Pr 1+ , Sc 3+ );  
 ( Ge 1+ , Ce 4+ ); ( Nb 1+ , Mo 3+ ); ( Pr 1+ , Zr 3+ );  
 ( As 1+ , Ca 3+ ); ( Nb 1+ , Sb 3+ ); ( Pr 1+ , Yb 3+ );  
 ( As 1+ , Br 3+ ); ( Nb 1+ , Bi 3+ ); ( Nd 1+ , Nb 3+ );  
 ( As 2+ , F 3+ ); ( Nb 2+ , Sn 4+ ); ( Nd 1+ , Hf 3+ );  
 ( As 2+ , Kr 4+ ); ( Nb 2+ , Sb 4+ ); ( Pm 1+ , Nb 3+ );  
 ( As 2+ , Nb 5+ ); ( Nb 3+ , Co 5+ ); ( Sm 1+ , Ti 3+ );  
 ( Se 1+ , Zn 3+ ); ( Nb 3+ , Rb 5+ ); ( Eu 1+ , V 3+ );  
 ( Se 1+ , Ce 4+ ); ( Nb 4+ , Zn 6+ ); ( Eu 1+ , Mo 3+ );  
 ( Se 2+ , Kr 4+ ); ( Mo 1+ , Se 3+ ); ( Eu 1+ , Sb 3+ );  
 ( Se 2+ , Nb 5+ ); ( Mo 1+ , I 3+ ); ( Gd 1+ , Bi 3+ );  
 ( Se 3+ , Ni 5+ ); ( Mo 4+ , Fe 6+ ); ( Tb 1+ , Hf 3+ );  
 ( Se 4+ , Nb 7+ ); ( Mo 5+ , Rb 8+ ); ( Dy 1+ , Ti 3+ );  
 ( Br 0+ , Eu 3+ ); ( Ag 0+ , La 3+ ); ( Ho 1+ , Bi 3+ );  
 ( Br 0+ , Tm 3+ ); ( Ag 0+ , Ce 3+ ); ( Er 1+ , Bi 3+ );  
 ( Br 1+ , Nb 4+ ); ( Cd 0+ , La 3+ ); ( Tm 1+ , V 3+ );  
 ( Br 1+ , Gd 4+ ); ( In 1+ , Nd 4+ ); ( Tm 1+ , Mo 3+ );  
 ( Br 1+ , Ho 4+ ); ( In 1+ , Tb 4+ ); ( Tm 1+ , Sb 3+ );  
 ( Br 1+ , Er 4+ ); ( Sn 1+ , Si 3+ ); ( Yb 1+ , Al 3+ );  
 ( Br 2+ , F 3+ ); ( Sn 1+ , Co 3+ ); ( Yb 1+ , Ru 3+ );  
 ( Br 2+ , Ga 4+ ); ( Sn 1+ , Ge 3+ ); ( Yb 1+ , In 3+ );  
 ( Br 3+ , O 4+ ); ( Sn 2+ , F 3+ ); ( Yb 1+ , Sn 3+ );  
 ( Br 3+ , Al 4+ ); ( Sn 2+ , Ga 4+ ); ( Lu 1+ , Tc 3+ );  
 ( Br 4+ , N 5+ ); ( Sb 1+ , Si 3+ ); ( Lu 1+ , Ru 3+ );  
 ( Kr 0+ , Ti 3+ ); ( Sb 1+ , Co 3+ ); ( Lu 1+ , In 3+ );  
 ( Kr 1+ , Sn 4+ ); ( Sb 1+ , Ge 3+ ); ( Lu 1+ , Sn 3+ );  
 ( Kr 1+ , Sb 4+ ); ( Sb 2+ , As 4+ ); ( Hf 1+ , Sc 3+ );  
 ( Kr 2+ , Ne 3+ ); ( Te 1+ , Mn 3+ ); ( Hf 1+ , Yb 3+ );  
 ( Kr 2+ , Bi 5+ ); ( Te 1+ , As 3+ ); ( Hg 0+ , La 3+ );

85

146

( Kr 3+ , O 4+ ); ( Te 1+ , Rh 3+ ); ( Pb 1+ , Ni 3+ );  
 ( Kr 3+ , Al 4+ ); ( Te 1+ , Te 3+ ); ( Pb 1+ , Se 3+ );  
 ( Kr 4+ , Ar 6+ ); ( Te 1+ , Tl 3+ ); ( Pb 2+ , F 3+ );  
 ( Rb 0+ , Sc 3+ ); ( Te 2+ , Cr 4+ ); ( Pb 2+ , Ga 4+ );  
 ( Rb 0+ , Zr 3+ ); ( Te 2+ , Ge 4+ ); ( Bi 1+ , P 3+ );  
 ( Rb 0+ , Yb 3+ ); ( Te 2+ , As 4+ ); ( Bi 1+ , Sr 3+ );  
 ( Rb 1+ , N 3+ ); ( Te 3+ , Zr 5+ ); ( La 1+ , Ru 3+ );  
 ( Sr 1+ , C 3+ ); ( Te 4+ , Ni 6+ ); ( La 1+ , In 3+ );  
 ( Sr 1+ , Ar 3+ ); ( Te 4+ , Cu 6+ ); ( La 1+ , Sn 3+ );  
 ( Sr 1+ , Ti 4+ ); ( Xe 0+ , Pr 3+ ); ( Ce 1+ , Sm 3+ ); and  
 ( Sr 1+ , Te 4+ ); ( Xe 0+ , Nd 3+ ); ( Ce 1+ , Dy 3+ ).  
 ( Sr 3+ , Nb 6+ ); ( La 1+ , Tc 3+ );

5052. (Amended) A fuel cell comprising:

a vessel having first and second compartments;

a source of at least one increased binding energy hydrogen  
 species associated with said [vessel] first compartment; [and]

a cathode in said [vessel] first compartment;

an anode in said second compartment; and

a salt bridge connecting said anode and said cathode.

51  
53. (Amended) A fuel cell comprising:

a first walled structure defining an internal volume, wherein at least one wall  
 comprises a cathode;

a second walled structure defining an internal volume containing an anode;

a salt bridge connecting the internal volumes of said first and second walled  
 structures;

a source of reductant associated with said second walled structure; and

a source of hydrido atoms associated with said first walled structure.

Please add new claims 56-58 as follows:

54  
56. A fuel cell according to any one of claims 1, <sup>11</sup>15, <sup>14</sup>16, <sup>16</sup>18, <sup>18</sup>20, <sup>20-27</sup>22-29 and <sup>50</sup>52, wherein  
 said cathode is said first compartment.

B7  
147